

A New Generation (Already) of HEC GIS Applications

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Since 1998, the Hydrologic Engineering Center has released several versions of GIS pre- and post-processors for its hydrology and hydraulics models, HEC-HMS and HEC-RAS. These applications—named HEC-GeoHMS and HEC-GeoRAS respectively—were developed as ArcView 3 extensions written in the Avenue scripting language. ArcView and Avenue are products of the Environmental Systems Research Institute, Inc. (ESRI).

Recent changes in ESRI's software architecture have made it necessary for HEC to completely redesign HEC-GeoRAS and HEC-GeoHMS. ESRI dramatically changed the nature of ArcView and discontinued support of the Avenue language for ArcView versions beyond 3.x. The representation of geospatial data within ArcView and ArcInfo has moved away from a file-based organization to a database approach, and it is now possible to develop ArcGIS applications in widely used object-oriented programming languages like Visual Basic and C++.

The new versions of HEC-GeoRAS and HEC-GeoHMS will incorporate ArcHydro, an ArcGIS data model for support of water resources applications developed by the GIS Water Resources Consortium, a private/public/university group led by ESRI and the Center for Research in Water Resources at the University of Texas at Austin. ArcHydro includes objects for representing catchments, routing reaches, reservoirs, cross-sections, and other features used in HEC's models. By using the ArcHydro representations of these features, HEC-GeoRAS and HEC-GeoHMS will inherit a set of tools for creating and manipulating these features. These tools and data standards will make the new programs more flexible than their predecessors and should also make the data that they produce more compliant with GIS standards inside and outside the Corps of Engineers.